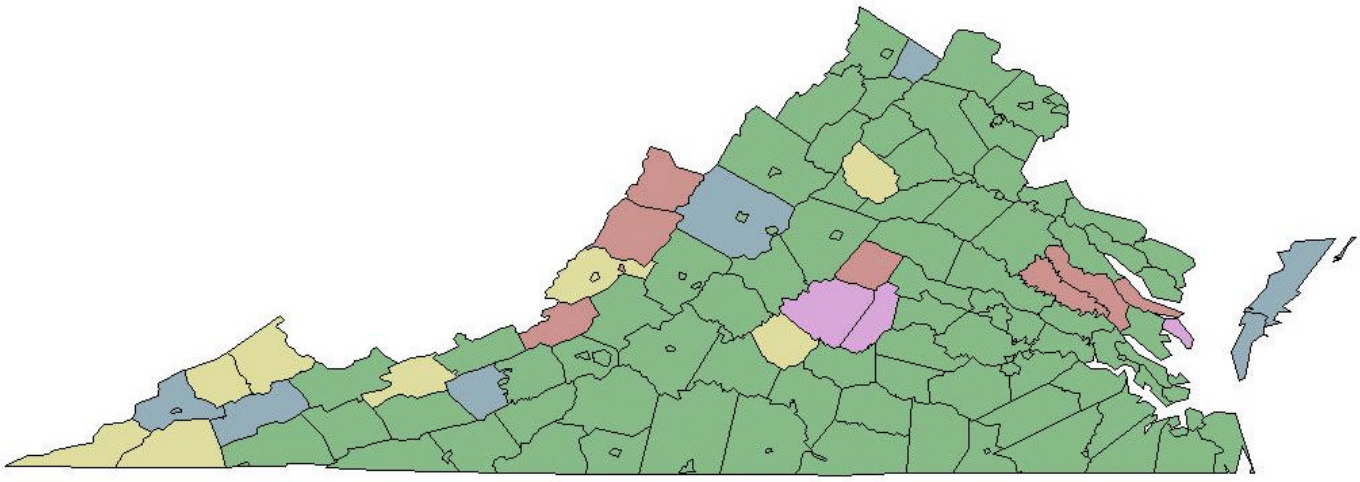
Wireless E-911 Services Board

Annual Report



Prepared by the
Department of Technology Planning
Division of Public Safety Communications
February 2001

Table of Contents

Table of Figures

Background

During the 2000 Session, the General Assembly enacted omnibus legislation (Senate Bill 148) to enhance the delivery of public safety services to citizens of the Commonwealth through improvements to emergency telecommunications systems. First, the legislation established 9-1-1 as the only emergency number for use in the Commonwealth and dates by which localities must implement wireline enhanced 9-1-1 and wireless 9-1-1. It also expanded the Wireless E-911 Services Board (Board) both in size and in scope. The Board increased from seven to fourteen members adding representatives for the police chiefs, fire chiefs, EMS chiefs, sheriffs, State Police, and emergency management. The scope of the Board was expanded to include the disbursement of funding for the implementation of wireline enhanced 9-1-1 and policy-making authority for issues relating to wireless 9-1-1. To provide staff support the Division of Public Safety Communications (DPSC) was created within the Department of Technology Planning.

To assist the Board with the implementation of wireline enhanced 9-1-1, the General Assembly appropriated $1.4 million in the second year of the FY01-02 biennium budget to assist localities with the provision of enhanced 9-1-1 services. To qualify for funding the localities must be "making a good-faith effort to develop E-911 wireline emergency telephone services, but have a demonstrated financial need for state assistance." As part of the FY02 proposed amendments, the Governor requested the appropriation be increased to $9.8 million and that Wireless E-911 Funds be used instead of general funds.

Since being constituted in October 2000, the Board has met monthly as required by *Code of Virginia*. During that time, the Board has conducted the audit of FY2000 funding provided by the previous Board (22 localities, 7 wireless providers), approved eight adjustments to FY2001 funding requests, approved sixty PSAPs for FY2002 funding (about $7.7 million) and is currently processing FY2002 funding requests from nine wireless providers. In addition to their wireless activities, the Board has also drafted the guidelines for the Wireline E-911 Grant process. The Board will approve the guidelines at their April meeting pending the approval of the 2001 Appropriations Act. If the Act is not approved, insufficient funds will be available for the project.

The following sections of the report provide a detailed analysis of the current state of enhanced 9-1-1 in the Commonwealth exploring both the wireless and wireline implementations.

Wireless Enhanced 9-1-1

Introduction

Today's society is becoming more and more wireless. Current estimates place the number of cellular telephones in the United States at over 100 million (2.35 million in Virginia in October 2000) with 40,000 being added each day. Public safety answering points (PSAP) around the nation have reported that the percentage of calls coming from wireless telephones is increasing at an exponential rate. Of concern to the PSAPs is that wireless calls to 9-1-1 do not provide the location of the caller the way wireline enhanced 9-1-1 does. This lack of an automatic location results in more time for the call taker to process the call or the inability to locate the caller at all. Several recent incidents have occurred around the country that demonstrate the problems PSAPs can have locating a wireless 9-1-1 caller.

To respond to this issue, in 1996, the Federal Communications Commission (FCC) released an order requiring wireless providers to implement enhanced features and location technology. The implementation was to occur in two phases. Phase I provides the PSAP with the caller's telephone number and the address of the cell site receiving the call along with the orientation of the antenna, if the antenna is directional. Phase II provides the PSAP with the actual location of the caller within a defined margin of error depending on the location technology used by the provider (see sidebar). According to the order, the wireless provider must implement Phase I within six months of a request from the PSAP. The timeline for Phase II is contingent on the location technology selected by the wireless provider, network-based (triangulation) or handset-based (global positioning system – GPS). The wireless providers were required to declare the location technology they planned to use. In Virginia, some wireless providers have selected a handset-based solution and others, a network-based solution.

Phase II Error/Timing

Network based solution:

Accuracy

- 100 meter accuracy 67% of the time
- 300 meter accuracy 95% of the time

Timing

- Six months after request must implement 50% of network
- 100% of network within 18 months of request

Handset based solution:

Accuracy

- 50 meter accuracy 67% of the time
- 150 meter accuracy 95% of the time

Timing

- Must offer handsets with GPS capability by October 2001
- 25% of new handset must be GPS capable by December 31, 2001
- 50% of new handsets mu st be GPS capable by June 30, 2002
- 100% of new handsets must be GPS capable by December 31, 2002
- 95% of all customers must be converted to GPS capable handsets by December 31, 2005

Wireless Funding

The Wireless E-911 Fund is generated by a $0.75 surcharge placed on every wireless telephone billed by a wireless provider in Virginia. The fund currently generates approximately $1.7 million each month. The Wireless E-911 Services Board began providing this funding to PSAPs and wireless providers in the FY2000 budget year. In the first year, 22 localities requested a total of $4.4 million in funding. The twelve wireless providers serving those localities requested approximately $4 million to support the PSAP requests; however, the providers actually only spent just under $400,000 during FY2000 due to delays with implementations. Likewise, the audit process conducted after the fiscal year ended revealed that the PSAPs had spent approximately $4 million on the implementation of wireless E-911. The difference was caused by a number of factors, including inaccurate estimates of call load data, requesting funding for equipment that turned out to be unnecessary, and over-estimating other project costs. Not all PSAPs had to return funding to the Board. Seven PSAPs received additional funding because of conservative initial estimates. The Board expects that much of the inaccuracy is due to a lack of experience with wireless data and that accuracy will improve in the coming years.

The Board originally approved 35 PSAP submissions for FY2001; however, six additional submissions have been approved (the most recent in February 2001), with total approved funding over $6.6 million. Many of the first time submissions include one-time purchases that are not included in future submissions to the Board. After the initial installation, most submissions simply include equipment maintenance, trunking costs, and personnel costs. The wireless providers submitted funding requests for FY2001 totaling an estimated $4.4 million. The majority of their costs are derived from the monthly recurring costs. Only about $450,000 are non-recurring costs.

Since the monthly recurring costs do not start until service is implemented and many installations continue to be delayed, it is unlikely that even $1 million of the $4.4 million authorized will in fact be spent in FY2001.

For FY2002, the Board has approved 60 PSAP submissions, which serve 72 localities in the Commonwealth (Figure 1), totaling over $7.6 million (Figure 2). While this represents a

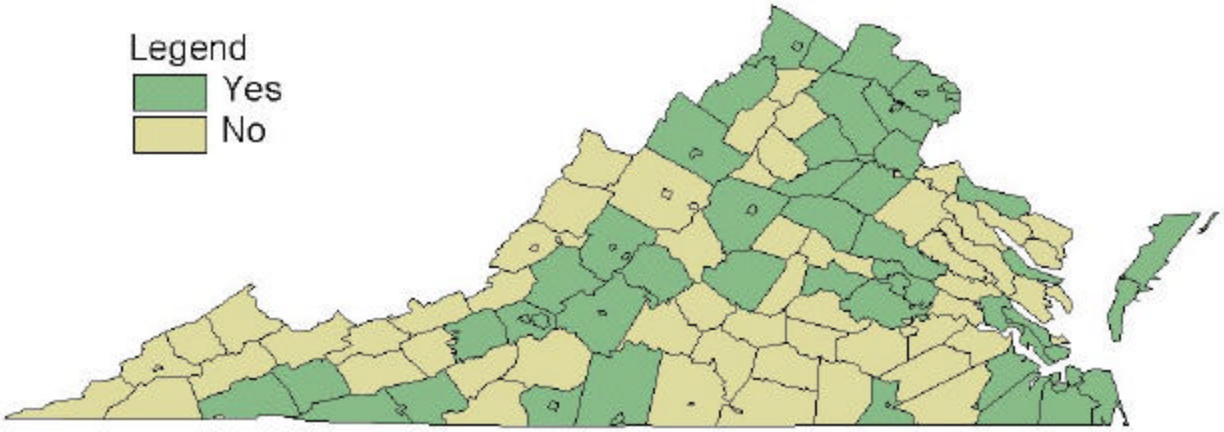


Figure 1 - Localities making an FY2002 funding request

significant increase from FY2001, it is less than the number expected, considering the statutory requirement for implementation of wireless 9-1-1 by July 1, 2002 for any PSAP that was wireline enhanced 9-1-1 capable by July 1, 2000. Since a total of 33 jurisdictions were not wireline enhanced 9-1-1 by July 1, 2000, there are 103 localities required to implement wireless 9-1-1 by the end of FY2002. Though the *Code* only requires localities to take the wireless 9-1-1 call from the State Police (commonly referred to as Phase 0), most localities decide to implement wireless Phase I, giving them the additional information about the caller and access to the Wireless E-911 Fund. It is unclear at this time if the 31 localities that have not made a request to the Board are simply planning to implement Phase 0 or will be submitting a request in the future. DPSC staff has been aggressively contacting these localities and making them aware of the statutory requirements and funding opportunities. These contacts have led to several new submissions being received and several regional efforts being initiated.

Jurisdiction	FY2000	FY2001	FY2002
Alexandria, City of (Police)	$149,045.00	$126,291.00	$156,998.51
Amherst County			$126,366.53
Arlington County	$193,039.00	$283,021.00	$216,336.00
Bedford County		$153,536.00	$49,775.28
Buckingham County			$26,486.00
Charlottesville, UVA, Albemarle Co.	$185,610.00	$137,735.53	$246,790.00
Chesapeake, City of	$112,982.00	$136,149.00	$152,650.00
Chesterfield County	$116,323.00	$282,964.00	$181,527.00
Christiansburg, City of		$96,913.00	$8,000.00
Clarke County		$65,067.00	$18,343.00
Culpeper County		$39,310.00	$53,094.00
Danville, City of		$147,606.00	$76,751.57
Eastern Shore 9-1-1	$109,561.00	$44,295.21	$47,412.62
Emporia, City of			$51,314.00
Fairfax County	$1,249,602.00	$1,636,330.00	$1,979,879.00

Figure 2 - Jurisdictions seeking funding from the Wireless E-911 Services Board (part 1)

Farmville, Town of			Note 1
Franklin, City of			Note 1
Frederick County		$83,172.00	$20,284.66
Greenville County			Note 1
Hampton, City of	$206,029.00	$105,142.00	$85,744.00
Hanover County		$171,876.58	$266,730.49
Harrisonburg - Rockingham 9-1-1	$106,575.08	$167,201.19	$167,201.19
Henrico County	$132,741.00	$241,833.00	$133,395.00
Hopewell, City of			$109,379.00
Isle of Wight County			$59,084.00
James City County		$99,109.00	$55,509.00
Loudoun County	$83,523.00	$91,722.00	$110,058.00
Louisa County		$50,573.37	$77,879.00
Lynchburg, City of	$127,130.00	$79,211.00	$173,797.00
Martinsville – Henry County 9-1-1		$41,862.00	$55,106.00
Middlesex County		$48,719.20	Note 1
Montgomery County		$71,925.00	$6,849.00
Newport News, City of	$170,684.00	$119,163.20	$140,101.00
Norfolk, City of	$192,593.00	$253,711.00	$445,105.00
Orange County		$131,091.13	$52,526.00
Pittsylvania County		$87,481.00	$22,299.00
Portsmouth, City of	$130,134.00	$121,006.00	$133,285.00
Powhatan County	$5,613.00	$86,676.00	$28,568.00
Prince William County	$347,277.00	$477,032.00	$457,167.00
Richmond, City of	$89,740.00	$140,812.00	$143,825.00
Roanoke County			$211,886.75
Roanoke, City of			$232,418.00
Rockbridge Regional 9-1-1		$1,236.00	$48,308.00
Salem, City of			$87,085.00
Shenandoah County	$62,155.89	$124,381.00	$40,400.00
Smyth County			$23,043.00
Southampton County			Note 1
Spotsylvania County			$41,956.68
Stafford County			$95,969.65
Suffolk, City of	$35,051.00	$177,285.75	$45,565.00
Twin Counties 9-1-1		$67,977.00	$79,184.00
Vinton, Town of			Note 1
Virginia Beach, City of	$159,504.00	$248,675.00	$385,175.00
Warrenton - Fauquier Joint 9-1-1		$43,477.00	$50,213.00
Washington County		Note 1	$47,871.00
Westmoreland County		$36,054.63	Note 1
Williamsburg, City of			$64,179.00
Winchester, City of		$78,365.02	$34,055.00
Wytheville, Town of			Note 1
York County	$57,286.00	$63,873.00	$51,076.84
Total	$4,022,197.97	$6,659,860.81	$7,674,001.02

Note 1 – Locality has submitted a letter of intent but has not requested a specific amount of funding.

Figure 2 - Jurisdictions seeking funding from the Wireless E-911 Services Board (part 2)

The Wireless E-911 Fund

The Wireless E-911 Fund is projected to have a balance of $40 million at the end of FY2001. This raises an important question: Should the surcharge rate be lowered? Projections for statewide deployment indicate that the surcharge rate should not be lowered. Using average call load data from the submissions received by the Board and the PSAP operating costs from the audit conducted by the Auditor of Public Accounts, the amount needed to fund the annual PSAP costs of statewide deployment of wireless enhanced 9-1-1 Phase I is $10,294,000. Using the average cost per subscriber per month from the wireless provider's submissions, the amount needed to fund the wireless provider costs is $10,054,000. The projected revenue for this same time period is $22,430,195. This means that the revenue generated by the $0.75 surcharge is adequate to fund the costs with an appropriate contingency of approximately 10%.

With statewide deployment still 12 to 18 months away, the question shifts to the use of the fund balance. The Governor's FY2002 revised budget included an appropriation of $9.8 million from the Wireless E-911 Fund to be used for grants to localities to assist with the implementation of wireline enhanced 9-1-1. While the *Code* does not specifically allow the Board to use wireless funding for this purpose, wireline enhanced 9-1-1 is required to implement wireless enhanced 9-1-1, so this was viewed as an appropriate use of the fund. Another prerequisite for wireless enhanced 9-1-1 Phase II is the existence of a mapping system for the PSAP to locate the longitude and latitude transmitted by the wireless provider. As a result, the Board directed staff to explore a partnership with the Virginia Geographical Information network (VGIN) on the statewide base mapping initiative.

Another potential requirement of the fund balance is the capital cost of implementing wireless E-911 Phase II. While official costs have not yet been provided, industry experts are placing the cost of a network-based solution at $10,000 to $20,000 per tower. Among the wireless providers that have selected a network-based solution, there are an estimated 1,500 towers in Virginia. It has not been determined if the entire cost of implementation will be borne by the Wireless E-911 Fund; however, the total cost for statewide implementation of just the tower component of Phase II would be $15 to $30 million, consuming the projected fund balance.

Project Status

To date, only two PSAPs, Charlottesville/Albemarle County and York County, have been able to

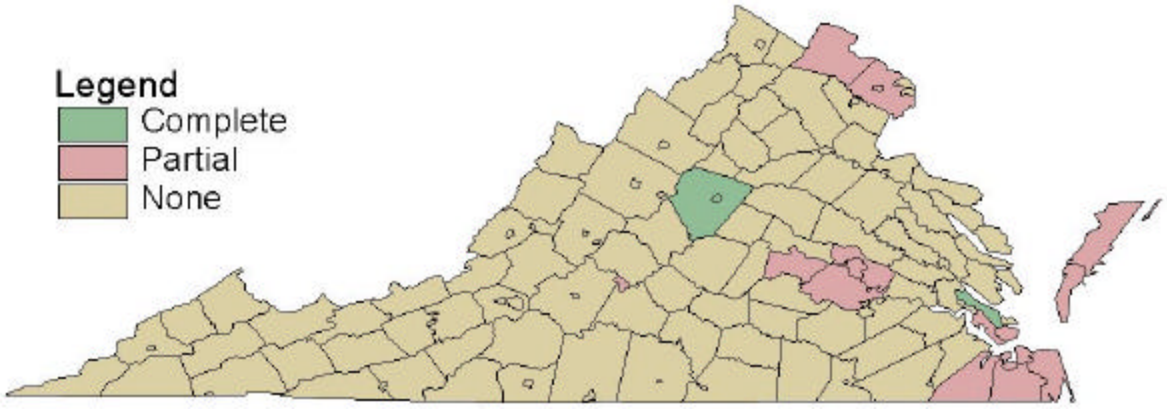


Figure 3 - Wireless E-911 Phase I Implementations

implement wireless E-911 Phase I (call back number and cell site location) with all of the wireless providers serving the locality. Seventeen other localities have implemented with at least one of their providers (Figure 3).

Though the FCC order requires implementation within six months of the PSAP's request, many of the implementations are more than 18 months since the request. As an example, the five Northern Virginia localities as a group requested Phase I in May of 1999. As of March 1, 2000, only one provider is providing Phase I service in Fairfax County and Loudoun County. There is a multitude of reasons for the delays, but many are related to the newness of the technology. While Phase I has been implemented in other areas of the country, Virginia was the first place many of the companies attempted to implement it.

The Board has expressed a large degree of frustration with the lack of progress. It should be noted that it does not appear that the delay is being caused by the localities. Early delays were the result of a lack of preparedness by wireless providers and wireline telephone companies. The cause of the current delays is unclear. As a result, the Board is in the process of conducting status reviews of each wireless provider and the wireline telephone companies. Wireless providers are also being asked to provide the Board with a plan for the implementation of the 62 localities requesting funding in FY2002. The purpose of the review is not to lay blame, but rather to identify problems and find solutions to ensure the timely implementation of this life-saving service.

Wireless Responsibility

Section 56-484.16 of the *Code of Virginia* makes clear the General Assembly's intent that wireless 9-1-1 calls should be answered by the local PSAP instead of the State Police. All nine localities required to take the wireless calls from the State Police in the 1999 budget amendment did so by July 1, 2000. Progress has been made in other localities as well (Figure 4).

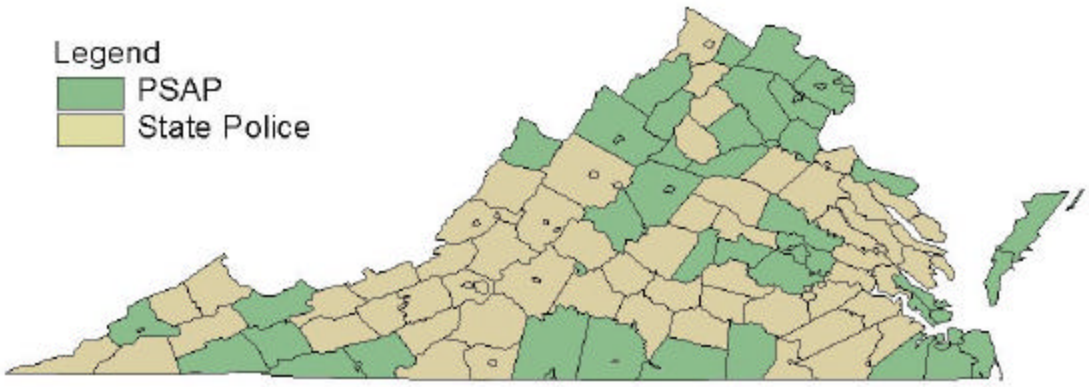


Figure 4 - Responsibility for Wireless 9-1-1

Localities implementing wireless 9-1-1, as required by the *Code*, are encouraged by the Board to take the extra step to implement wireless enhanced 9-1-1 Phase I. This decision gives the localities greater information (call back number and cell site location) on wireless calls and access to funding from the Board. This being the case, it is anticipated that at least the 72 localities making FY2002 wireless funding requests will take responsibility for the wireless call by July 2002.

Wireline Enhanced 9-1-1

Localities without Enhanced 9-1-1

As of July 1, 2000, there were 23 jurisdictions (Figure 5 & 6) that did not provide enhanced 9-1-1 service; however, five of those jurisdictions (Essex, Lunenburg, Nelson, Tazwell, and Westmoreland Counties) implemented by the end of 2000. In addition to these jurisdictions, there are ten more that provide a form of enhanced 9-1-1 that may not be considered as truly enhanced. In these jurisdictions the enhanced 9-1-1 equipment exists, but the location information displayed to the call taker is rural route information or directions and not a street address that has been validated. This may have originally been done as a cost saving measure, as it does not require the locality to map or address the jurisdiction. However, such jurisdictions may need to assign street addresses to the structures throughout these localities in order to become fully enhanced.

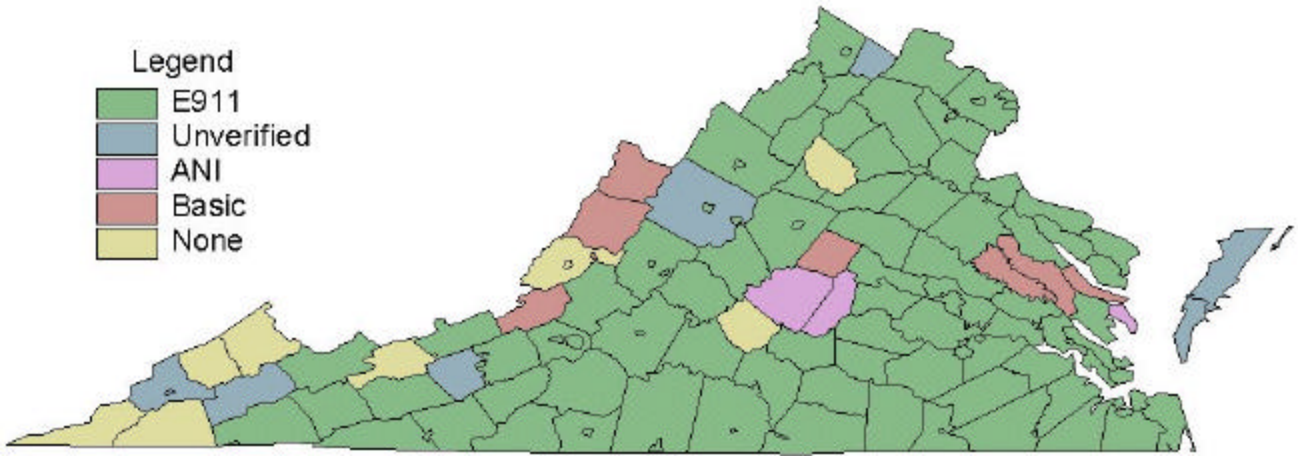


Figure 5 - Wireline enhanced 9-1-1 service levels

The process for implementation of enhanced 9-1-1 can be broken down into two broad processes, (1) the mapping and addressing process and (2) the network and equipment process. During the mapping and addressing process, the jurisdiction, by itself or with a vendor, identifies and names all of the streets and structures in the locality, assigns a street address to each structure in the locality and posts a street sign at each intersection. Often the jurisdiction will hire one vendor to perform the entire mapping and address process with the exception of the street naming, which is the responsibility of the jurisdiction. The result of this process is a list of the old addresses matched with the new addresses and the occupant's name and telephone number. The total cost for this process can range from $135,000 to $275,000 depending on the size of the jurisdiction. The Board is investigating whether executing regional contracts for mapping services would reduce the cost of this process.

The second process is the network and equipment process. The local telephone company provides the network components, which are basically the telephone lines needed to complete the 9-1-1 call from the caller to the public safety answering point (PSAP). The local telephone company often, but not always, provides the enhanced 9-1-1 telephone equipment. This includes the equipment to answer the call, request the location information and display the information to the call taker. The cost for the network is $2,100 to $7,500 per 1,000 telephone access lines in the jurisdiction. In addition, the equipment will cost approximately $150,000 for a two-position PSAP.

Of the 18 localities that will not be providing enhanced 9-1-1 services by January 1, 2001, five have completed the mapping and addressing process, though one has not completed installation of the street signs. The remaining jurisdictions are in the early stages of planning or implementation of enhanced 9-1-1.

County	Map/ Add.	Sign	Equip	Net.	Sur.	Comments
Alleghany County	Y	Y	N	N	$0.30	Looking at a regional PSAP with Clifton Forge and Covington. Has completed the addressing process.
Appomattox County	N	N	N	N	$3.00	Established an implementation committee.
Bath County	N	N	N	N		Has basic 9-1-1 with call identification.
Bland County	N	N	N	N	$3.00	Established an implementation committee.
Buchanan County	N	N	N	N	$3.00	Established an implementation committee.
City of Clifton Forge	Y	Y	N	N		Looking at regional PSAP with Alleghany County. Has completed the addressing process.
City of Covington	Y	Y	N	N	$0.30	Looking at a regional PSAP with Alleghany County. Has completed the addressing process. Has collected a surcharge since 1992.
Craig County	N	N	N	N		No progress at this time.
Dickenson County	N	N	N	N	$3.00	Established an implementation committee.
Essex County	Y	Y	Y	Y		Implementation October 2000.
Fluvanna County	N	N	N	N	$1.50	Has basic 9-1-1. Recently signed a contract for mapping, addressing and street signs.
Highland County	N	N	N	N		Has basic 9-1-1 with call identification.
King & Queen County	N	N	N	N	$2.00	Has basic 9-1-1. 70% completed with street naming process.
King William County	Y	Y	N	N	$3.00	Has basic 9-1-1. Has completed the mapping and addressing process.
Lee County	N	N	N	N		Recently established an implementation committee.
Lunenburg County	Y	Y	Y	Y		Implementation December 2000.
Madison County	N	N	N	N	$3.00	Recently established an implementation and street naming committee.
Mathews County	N	N	N	N	$2.00	Has basic 9-1-1 with caller identification. Recently signed a contract for mapping, addressing and street signs.
Middlesex County	Y	N	N	N	$2.00	Has basic 9-1-1. Currently, verifying street name and installing street signs. Planned implementation of E9-1-1 in summer 2001.
Nelson County	Y	Y	Y	Y		Implementation September 2000.
Scott County	N	N	N	N		Working on establishing a surcharge.
Tazwell County	Y	Y	Y	Y		Implementation August 2000.
Westmoreland County	Y	Y	Y	Y		Implementation December 2000.

Figure 6 - Localities without E-911

Proposed Wireline E-911 Grant Guidelines

The Wireless E-911 Services Board is responsible for the establishment of the wireline E-911 grant guidelines. At their November and December 2000 meetings, the Board considered the following issues:

- Whether non-verified enhanced 9-1-1 should be considered as truly enhanced.

- What costs should be allowable under the grant program.
- How to measure a jurisdiction's need for state financial assistance.
- Should the grant be a single or multiple year grant.

The following sections detail the results of those discussions.

Non-Verified E-911

Ten jurisdictions (Figure 7) currently provide a type of enhanced 9-1-1 service that does not verify the address information when it is entered in the 9-1-1 database. Simply put, whatever location information is provided to the telephone company when the telephone service is ordered is entered into the 9-1-1 database. In a typical enhanced 9-1-1 system, all telephone service requests are verified against a list of the valid street names and address ranges in the jurisdiction. Consequently, if a citizen requests telephone service and provides an incorrect address, it is identified as an error and is flagged for resolution. This does not happen with a non-verified enhanced 9-1-1 system. All records are entered in the 9-1-1 database regardless of being valid. Localities often select this type of service to reduce cost by avoiding the need to map and address the jurisdiction. Instead of addresses, rural route or direction information is used in the 9-1-1 database.

The Wireless E-911 Services Board is considering whether this level of service should be considered as being fully enhanced 9-1-1. If not, these nine jurisdictions would be required to become fully enhanced 9-1-1 capable by the July 1, 2003 deadline established by *Code*. Six of the

County	Map/ Add.	Sign	Equip	Net.	Comments
Accomack/Northampton Co.	Y	Y	Y	Y	Has been mapped and addressed. Is working with the telephone company to become validated.
Augusta County	Y	Y	Y	Y	Has been mapped and addressed. Is working with the telephone company to become validated.
Buckingham County	N	N	Y	Y	Needs to map and address before becoming validated.
Clarke County	Y	Y	Y	Y	Has been mapped and addressed. Is working with the telephone company to become validated.
Cumberland County	N	N	Y	Y	Is in the process of mapping and addressing.
City of Norton	Y	Y	Y	Y	Has been mapped and addressed. Needs to work with the telephone company to become validated.
Prince Edward County	Y	N	Y	Y	Has been mapped and addressed. Needs to work with the telephone company to become validated.
Pulaski County	Y	Y	Y	Y	Has been mapped and addressed. Needs to work with the telephone company to become validated.
Russell County	N	N	Y	Y	Needs to map and address before becoming validated.
Wise County	N	N	Y	Y	Needs to map and address before becoming validated.

Figure 7 - Non-Verified Enhanced 9-1-1

ten jurisdictions have everything in place to become fully enhanced. They are mapped, addressed, and have all of the required equipment. They need only communicate the valid street information to the telephone company, then the telephone company can validate all of the existing records in the 9-1-1 database. After fixing any invalid records, the jurisdiction will be providing fully enhanced

9-1-1. The four remaining jurisdictions need to map and address the jurisdiction before going through the validation process. Some of these jurisdictions may have a financial need for state assistance in order to complete this process.

Allowable Costs

The Wireless E-911 Services Board has determined that the following costs be considered allowable under the wireline E-911 grant guidelines: mapping; addressing; street signage; customer premise equipment (PSAP equipment); and network costs. Further the Board has determined that the following costs be specifically identified as not being eligible for funding under the wireline E-911 grant guidelines: voice logging equipment; computer-aided dispatch systems; buildings and furnishings; and radio systems. The Board would consider any other items on a case-by-case basis.

Ability to Pay

The Wireless E-911 Services Board considered two methods for determining the financial need of each jurisdiction. The first method utilizes the Composite Index to determine the percentage of the allowable costs that the jurisdiction must fund. The Composite Index is used elsewhere in state government as an ability to pay indicator for localities, such as for education funding. As an illustration, if a jurisdiction has a Composite Index of .2345, the jurisdiction must fund 23.45% of the allowable cost of the project while the Board will fund 76.55% of the cost.

The second method considered by the Board for determining the financial need of a jurisdiction was based on the amount of funding that could be generated by the local E-911 surcharge. For a jurisdiction with 5,000 telephone lines, the amount funded by the jurisdiction would be calculated by multiplying the telephone line count by $1.50 (a midrange surcharge) by 24 months (the amount of time before the July 1, 2003 deadline). In this case the jurisdiction would fund $180,000 while the Board would fund the remaining cost of the project.

Since the Composite Index is an established method of determining a jurisdiction's ability to pay, the Wireless E-911 Services Board selected it as the preferred method (Figure 8); however, a disadvantage of this method was identified. A few of the jurisdictions would not be able to generate their share of the project funding using the local E-911 surcharge. In order to generate their share, one jurisdiction would have to charge $6.50 per month per access line over the next 24 months, which significantly exceeds the $3.00 monthly cap established in §58.1-3813.1 of the *Code of Virginia*.

To address this shortcoming, the Board developed the "Capped Composite" method of determining a jurisdiction's ability to pay. This method caps the jurisdiction's share as calculated using the Composite Index at the amount the jurisdiction can generate imposing a $1.50 over 24 months (Figure 9). The $1.50 amount is used rather than $3.00 to allow jurisdictions to use the surcharge to generate additional revenue for expenditures not covered by this grant, such as the salary of an E-911 Coordinator, and in deference to concerns raised regarding the amount of the E-911 surcharges.

County	Project Cost	Composite Method			
		Composite Index	Jurisdiction Share	State Share	Surcharge Needed
Alleghany County	$ 370,000	0.3354	$ 124,098	$ 245,902	$ 0.84
Appomattox County	$ 470,000	0.3121	$ 146,687	$ 323,313	$ 1.00
Bath County	**$ 455,000**	**0.8000**	**$ 364,000**	**$ 91,000**	**$ 3.64**
Bland County	$ 455,000	0.2748	$ 125,034	$ 329,966	$ 1.49
Buchanan County	$ 507,500	0.2573	$ 130,580	$ 376,920	$ 0.51
Buckingham County	$ 275,000	0.2694	$ 74,085	$ 200,915	$ 0.42
City of Clifton Forge	$ 340,000	0.2423	$ 82,382	$ 257,618	$ 1.57
City of Covington	$ 355,000	0.3358	$ 119,209	$ 235,791	$ 1.44
Craig County	$ 447,500	0.3416	$ 152,866	$ 294,634	$ 2.48
Cumberland County	$ 175,000	0.3394	$ 59,395	$ 115,605	$ 0.62
Dickenson County	$ 485,000	0.2358	$ 114,363	$ 370,637	$ 0.58
Fluvanna County	$ 500,000	0.3817	$ 190,850	$ 309,150	$ 0.83
Highland County	**$ 440,000**	**0.5502**	**$ 242,088**	**$ 197,912**	**$ 6.50**
King and Queen County	$ 455,000	0.4021	$ 182,956	$ 272,045	$ 1.92
King William County	$ 202,500	0.3662	$ 74,156	$ 128,345	$ 0.48
Lee County	$ 522,500	0.1886	$ 98,544	$ 423,957	$ 0.33
Madison County	$ 470,000	0.4005	$ 188,235	$ 281,765	$ 1.35
Mathews County	$ 462,500	0.4798	$ 221,908	$ 240,593	$ 2.01
Middlesex County	$ 287,500	0.5658	$ 162,668	$ 124,833	$ 1.40
Russell County	$ 275,000	0.2298	$ 63,195	$ 211,805	$ 0.19
Scott County	$ 507,500	0.2298	$ 116,624	$ 390,877	$ 0.44
Wise County	$ 275,000	0.2237	$ 61,518	$ 213,483	$ 0.13
	$8,457,500		**$3,033,920**	**$5,423,580**	

Figure 8 - Composite Index Method

County	Project Cost	Capped Composite		
		Jurisdiction Share	State Share	Amount Increased
Bath County	$ 455,000	$ 150,156	$ 304,844	$ 213,844
City of Clifton Forge	$ 340,000	$ 78,587	$ 261,413	$ 3,795
Craig County	$ 447,500	$ 92,468	$ 355,032	$ 60,398
Highland County	$ 440,000	$ 55,872	$ 384,128	$ 186,216
King and Queen County	$ 455,000	$ 143,172	$ 311,828	$ 39,784
Mathews County	$ 462,500	$ 165,695	$ 296,805	$ 56,212
				$ 560,248

Figure 9 - Jurisdictions Impacted by Capped Composite Method

Single/Multiple Year Grant

The Wireless E-911 Services Board has determined that a multiple year grant is most appropriate for this project. This means that a jurisdiction will submit a grant request for the entire project amount rather than only that which can be spent in the following fiscal year. In this way, the Board can determine the projected cost of the entire project so that a single appropriation can be made.

Future Issues Impacting 9-1-1

As we continue to implement wireline and wireless enhanced 9-1-1, technology continues to advance at an incredible rate providing new challenges to be met. Three of these technologies have emerged as the next challenges for public safety communications professionals.

Automatic Crash Notification (ACN)

An ACN device automatically initiates a wireless call to emergency dispatchers upon detecting a crash of recognizable impact. With Mayday or first generation ACN systems today, telematics specialists such as OnStar or ATX Technologies verify that a crash has occurred and contact the appropriate PSAP based upon the car's location. With advanced forms of ACN, critical crash data will be transmitted to dispatchers (type of vehicle, principle direction of force, delta velocity, number of passengers, whether the car rolled, whether passengers were wearing seatbelts, and injury probability), which can immediately be transferred to emergency professionals.

According to the ComCARE Alliance, a coalition of public and private groups supporting such initiatives, "ACN will reduce response times to crashes and the time from crash to care, allowing victims to be treated within the "Golden Hour". If response times can be cut by just a few minutes, experts estimate that each year thousands of debilitating injuries could be prevented and lives could be saved. This is particularly true in rural areas where response times can exceed an hour."

ACN will have a dramatic impact on PSAPs. The current enhanced 9-1-1 network is unable to carry the type of data generated by an ACN system. Even the network improvements being implemented as part of wireless enhanced 9-1-1 will not be able to handle ACN data. A new network will need to be designed and implemented. With first generation ACN systems available in many vehicles being sold today, second-generation systems may be available in the next few years.

Satellite Telephone Service

Though satellite telephone service has existed for many years, the size of the telephone and operational cost prevented many people from using the technology. With telephones now costing $499 and service plans from $1.00 per minute, satellite service is expected to become increasingly popular with people needing wireless service where traditional cellular or personal communications is not available.

As a result, the FCC has announced a notice of proposed rule-making for satellite telephone's ability to access 9-1-1. They are currently seeking comments on how such access could be accomplished and whether location information (similar to wireless Phase II) should be provided. Since satellite telephone is served by an antenna site in space and not one located in a specific locality, the big technological question is how to determine the appropriate PSAP to send the call to. A report and order on satellite telephone is expected from the FCC within a year.

Voice over Internet Protocol (IP)

Voice over IP could replace the current wireline telephone service in use today. The concept is to convert voice to data and transmit it across the Internet as any other data. Voice over IP products are currently available at almost any electronics store that allow people to use the Internet to make long distance calls, thus avoiding toll charges. Since most people still access the Internet using a standard telephone line, voice over IP has been slow to replace wireline telephone service. As high-

speed data becomes more widely available, voice over IP may increase significantly in popularity. The problem Voice over IP creates for the 9-1-1 system is the technology is so new that a method for locating such devices has not yet been developed.

Unfortunately, the FCC will not be addressing this issue in the short term. In a recent press release, the FCC Chairman spoke about voice over IP saying that the FCC would not institute any regulations that would tether such a fledgling technology. When specifically asked about enhanced 9-1-1, the Chairman commented that the technology must be given a chance to grow first, even before 9-1-1 requirements were placed upon it.

Conclusion

The implementation of wireless enhanced 9-1-1 is progressing slowly, but it is progressing. It is unclear at this point what impact the delays implementing wireless Phase I will have on meeting the dates required in §56-484.16 of the *Code* or on the implementation of Phase II. The amount of the wireless surcharge, $0.75, is appropriate given the cost of statewide implementation. While the Wireless E-911 Fund is currently healthy, the cost of Phase II will likely eliminate any fund balance currently enjoyed by the Fund. The Wireless E-911 Services Board has awarded a total of $7.8 million to 62 PSAPs for FY2002. The Board will be conducting progress reviews with the wireless and wireline providers to determine the reasons for the delays in implementation and what can be done to improve the upcoming installations.

Progress toward the implementation of statewide wireline enhanced 9-1-1 is contingent on the provision of funding. Using the "Capped Composite" method being considered by the Wireless E-911 Services Board, the state-funding share is $5,983,828. The current FY2002 appropriation is only $1.4 million. Whether the July 1, 2003 deadline for implementation of enhanced 9-1-1 is achievable will depend on an increase to the appropriation and the ability of the jurisdictions to complete the mapping and addressing process in a timely manner. The Governor's proposed budget included $9.8 million for wireline enhanced 9-1-1 grants. This report does indicate that the need for only about $6 million has been identified to date. However, the additional funding is appropriate for inevitable contingencies, such as the need to fund services not currently identified or a greater percentage of the cost, should the locality be able to demonstrate the fiscal need.